REMARKS

Claims 3-4, 6 and 9-10 have been amended. Upon entry of this amendment, claims 1-14 will remain currently pending in the present application. Claim 10 has been amended to use the same language as employed in claim 1.

Claims 1-4, 6-7 and 9-11 have been rejected under 35 U.S.C. §112, second paragraph as being indefinite. The specific detailed rejections are addressed below.

Claims 1 and 10 have been rejected under 35 U.S.C. §112, second paragraph, on the basis that, in the Examiner's view, the language, "detecting the analyte using the luminescence measurement" is vague because it is unclear how the detected luminescence measurement differentially excludes unbound labeled reactant or immunoreactant in the absence of analyte since there does not appear to be a separation step to separate unbound components. This rejection is respectfully traversed and reconsideration is requested for the reasons given below.

First, techniques for separating unbound components are very well known in the field. It has been described, for example, on page 3 of the specification that the lanthanide ion-ligand complex of the invention comprises an immunoreactant or a reactant for attachment to an analyte. Such a reactant or an immunoreactant is known in the art. Numerous publications relating to such reactants or immunoreactants are known to the skilled person, and it would be redundant to explain these well known possibilities in the framework of this application. It should be added that the precise nature of the bonding between the lanthanide ion-ligand complex and the analyte is of no importance to the invention. Some information is given on this subject in the specification on page 9, lines 14-30.

In operation, the lanthanide ion-ligand complex, after excitation, emits light through an acceptor molecule (luminescence emission). When the lanthanide ion-ligand complex–acceptor molecule is bound to an analyte, it still emits light. It is of no relevance whether the luminescence increases or decreases when bound the analyte, because unbound lanthanide ion-ligand complex is, for example, removed by washing, or is not measured when the detection only detects the surface of the solid phase.

Regarding the question of how unbound components are removed, the Examiner is referred to the specification page 10, lines 6-7 which explains that the lanthanide ion-ligand complex–analyte is coupled to a solid phase. It is completely clear to the skilled man from his

common general knowledge how unbound materials can be removed from the solid phase, for instance, by applying washing procedures, and how luminescence measurements are performed on these lanthanide ion-ligand complex-analyte constructs coupled to the solid phase. Since these are standard methods which can be found in any basic handbook in the field, further explanation of these methods in the present specification is not required to satisfy the requirements of 35 U.S.C. §112.

Claim 3 has been rejected on the basis that it recites improper Markush language. The examiner's suggested correction to claim 3 has been adopted by this amendment in order to overcome the objection.

Claim 4 has been rejected on the basis that it recites "can complex with" since, in the opinion of the Examiner, these words fail to recite a positive limitation in the claim. Although the applicant does not agree with the Examiner's position, the applicant has adopted the Examiner's suggestion of using the terminology "complexes with" to obviate this rejection.

Claim 9 has been rejected on the basis that it indefinite in reciting "can detect" which, in the examiner's opinion, is not a positive limitation in the claim. Although the applicant does not agree with the Examiner's position, the language "can detect" in claim 9 has been replaced by the language, "a detector for detection of" in order to overcome this rejection. A similar amendment has also been made to claim 6. It is considered that this amendment overcomes the rejection of claim 9 under 35 U.S.C. §112.

Favorable consideration and withdrawal of the rejections under 35 U.S.C. §112 is requested.

Claims 1-14 have been rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent no. 5,830,769 (hereinafter "Wieder et al.) in view of U.S. Patent no. 6,159,686 (Kardos et al.) for the reasons of record in paper no. 7. This rejection is respectfully traversed and reconsideration is requested for the reasons which follow and for the reasons given in the Declarations of Klemens Brunner which have been previously submitted in the present application.

First, it seems that the Examiner has misinterpreted the function and nature of the ligand part of the lanthanide ion-ligand complex of the present invention. Wieder et al. discloses a lanthanide ion-ligand complex as described by the Examiner on page 5 and page 6, first paragraph, of the Office action. However, the essential difference between the complex of the

present invention and the lanthanide-ion-ligand complex of Wieder et al. is not mentioned by the Examiner.

More particularly, Wieder et al. uses ligands of the types: polyaminocarboxylic acid, pyridine dicarbocylic acid and derivatives thereof. This ligand is the donor or sensitizer of the luminescence process. The energy input required to go from the ground state (S0) to the first excitation state (S1) for the donor or sensitizer employed by Wieder et al. is such that UV irradiation is needed to affect the excitation from the ground state (S0) to the excitation state (S1) (see Fig. 1 in the Brunner Declaration filed on July 12, 2003).

In contrast, the present invention uses a lanthanide ion-ligand complex wherein the donor or sensitizer ligand is a moiety such as rhodamine. In such lanthanide ion-ligand complexes the energy input required to go from the ground state (S0) to the excitation state (S1) is much smaller than in the case of Wieder et al.'s complexes, thereby allowing the use of visible light to affect the excitation, rather than the higher energy UV irradiation that is required to affect the excitation using the complexes of Wieder et al. The advantages of this novel method wherein visible light of lower energy than UV irradiation can be used, have been amply discussed in the specification and applicant's previous submissions and thus will not be repeated here.

With the above discussion in mind, the following points can be made. First, Kardos et al. makes use of a near IR pump for excitation, not of visible light. Therefore, a combination of Wieder et al. and Kardos et al. will lead to a system that is far removed from the present invention, i.e. the sensitizing (donor) moiety employed is different, and thus the energy required to affect excitation is also different.

Response to the Examiner's Comments in Section 6 of the Office action

In view of the above the following remarks are made.

A) The Examiner contends that the language of the present claims is broad enough to encompass the separate addition of a rhodamine or fluorescein derivative as an acceptor moiety, as disclosed by Wieder et al. The applicant respectfully disagrees with this conclusion.

The language of claims 1 and 10 require the preparation of a lanthanide ion-ligand complex wherein the ligand comprises a sensitizing moiety. Thus, in view of this language, the sensitising moiety, which is a component of the ligand, is required to be

part of the lanthanide ion-ligand complex.Although neither of claims 1 and 10 exclude adding a separate component into the mixture, claims 1 and 10 do require that the sensitizing moiety must be part of the lanthanide ion-ligand complex.
In contrast to the Examiner's contention, the rhodamine or fluorescein derivative acceptor moiety of Wieder et al. is added to the solution as a separate component and brought to a certain distance from the lanthanide ion-ligand complex, but the acceptor moiety does not form a part of the lanthanide ion-ligand complex as is required by the present claims. In Wieder et al. the sensitizing moiety (=ligand) is polyaminocarboxylic acid, pyridine dicarbocylic acid or a derivative thereof, whereas the acceptor, which does not form part of the lanthanide ion-ligand complex, may be the activator of Table I of Wieder et al., fluorescein, rhodamine, etc. See Wieder et al. at col. 12, line 64 – col. 13, line 62.
The sensitizing moiety of the instant invention is part of the ligand of the lanthanide ion-ligand complex, which is chemically bound to the lanthanide.

B) In Wieder fluorescein and rhodamine are acceptor molecules not sensitizing moieties (and as such not part of the lanthanide ion-ligand complex).
In the invention fluorescein and rhodamine are sensitizing moieties, not acceptor molecules (and as such part of the lanthanide ion-ligand complex).
In the invention the sensitizing moiety is thus the fluorescein or rhodamine moiety. This moiety is not the quencher of the emitted luminescence, but the generator thereof. In contrast thereto Wieder uses these moieties as quencher.

C) As is clear from the above there is no motivation to combine Wieder et al. and Kardos et al., because Wieder et al. needs UV excitation and Kardos et al. needs near IR excitation. If, for argument's sake, Wieder et al. and Kardos et al. are combined the present invention is not obtained, because the sensitizing moieties are different from those that are presently claimed, as discussed above. The system obtained by a combination of Wieder et al. and Kardos et al, as suggested by the Examiner, as indicated previously, will moreover not work because the lanthanide ion-ligand complexes of Wieder et al. cannot be excited by the near IR pump of Kardos et al.

For the foregoing reasons, favorable consideration and withdrawal of the rejection under 35 U.S.C. §103(a) of claims 1-14 as unpatentable over Weider, et al. in view of Kardos, et al. is respectfully requested.

Respectfully submitted,

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